AMENDMENTS TO THE DRAWINGS

In response to the Examiner's various objections to the drawings, Applicants' representative encloses a set of amended drawings that are correctly identified as "Replacement Sheets".

REMARKS

Claims 1-20 are pending in the current application. In an office action dated May 22, 2007 ("Office Action"), the Examiner objected to the drawings, objected to the equation on line 7 of page 20 of the current application, objected to claims 3-8, 10-13, 16, and 18-20, rejected claims 10-13 under 35 U.S.C. §101, rejected claims 1-4 under 35 U.S.C. §103(a) as being unpatentable over Lim, U.S. Patent Application Publication No. 2004/0017579 ("Lim") in view of Mittal et al., U.S. Patent Application Publication No. 2005/0286764 ("Mittal"), rejected claim 5 under 35 U.S.C. §103(a) as being unpatentable over Lim and Mittal in further view of Lee et al., U.S. Patent Application Publication No. 2004/0202368 ("Lee"), rejected claims 6-7 under 35 U.S.C. §103(a) as being unpatentable over Lim and Mittal in further view of Bow et al., (STIC), pattern recognition and image processing ("Bow"), rejected claim 8 under 35 U.S.C. §103(a) as being unpatentable over Lim, Mittal, Bow, and in further view of Padilla et al., U.S. Patent Application Publication No. 2003/0233197 ("Padilla"), rejected claims 9 and 11 under 35 U.S.C. §103(a) as being unpatentable over Lim and Mittal in further view of Gelenbe et al., U.S. Patent No. 5,995,651 ("Gelenbe"), rejected claim 10 under 35 U.S.C. §103(a) as being unpatentable over Lim and Mittal in further view of Kondo, U.S. Patent Application Publication No. 2004/0234160 ("Kondo"), rejected claims 12 and 13 under 35 U.S.C. §103(a) as being unpatentable over Lim, Mittal, and Gelenbe in further view of Belkin et al, U.S. Patent No. 6,738,087 ("Belkin"), rejected claim 14 under 35 U.S.C. §103(a) as being unpatentable over Mittal in view of Kamitani et al., U.S. Patent No. 6,327,385 ("Kamitani"), rejected claims 15-17 under 35 U.S.C. §103(a) as being unpatentable over Mittal and Kamitani and in further view of Lim, rejected claims 18-19 under 35 U.S.C. §103(a) as being unpatentable over Mittal, Kamitani, and Lim, in further view of Bow, and rejected claim 20 under 35 U.S.C. §103(a) as being unpatentable over Mittal, Kamitani, Lim, Bow, and in further view of Padilla. Applicants' representative has furnished corrected drawings, accordingly amended the specification, and amended claims to address several of the claim rejections. Applicants' representative respectfully traverses the remaining claim objections and all of the remaining rejections based on 35

U.S.C. §101 and 35 U.S.C. §103.

With regard to the claim objections to claim 3, Applicants' representative does not understand why the definite article "a" should be changed to the definite article "the," in all cases. For example, in claim 3, Applicants' representative can find no reference to a specific "feature pixel" or "background pixel" in the initial part of claim 3, or in claim 2 and claim 1 from which claim 3 depends. Moreover, use of the definite article "the" would imply that all pixels in the region of interest are either "the feature pixel," or "the background pixel," which makes no sense. Please note that the phrase "that a corresponding pixel is a feature pixel" modifies the phrase "a first binary value." The phrase "indicating that a corresponding pixel is a feature pixel" recites that the "first binary value" is indicative of a first classification of pixels, rather than indicating a particular pixel.

The Examiner's objection to the phrase "a low" in claim 4 and in claim 17 doe not make sense to Applicants' representative. Nothing prior to this phrase, in claims 4 and 17, and nothing in claim 1 or claims 15 and 14 refers to "a low pixel intensity" for the region of interest. These are the first instances of the phrase "low pixel intensity" in claim 4 and in claim 17. Therefore, the indefinite article "a" appears to be appropriate. With regard to the objection to claim 6, Applicants' representative can understand no reason for interchanging lines 9 and 8. The claim is deliberately written to reflect a computational method and, in Applicants' representative's opinion, does so effectively as written. Similar comments apply to the Examiner's objection to claim 18. Applicants' representative has amended claims 5 and 11 in response to the Examiner's objections to claims 5 and 11.

With regard to the Examiner's 35 U.S.C. §101 rejections, Applicants' representative can find no justification in statute, rule, or case law for the rejections of claims 10-11. For example, in the rejection of claims 10, 12, and 13, the Examiner states: "Claims 10, 12, and 13 are directed entirely to the various set of data and do not define any functional interrelationships between any of the data elements that make up the 'database.' Consequently, the claims merely define the data per se, and do not define functional description material capable of imparting useful functionality to a general-

purpose computer or derive." Applicants' representative can find nothing in 35 U.S.C. §101 that would suggest a requirement for defining functional relationships. Applicants can similarly find nothing in 35 U.S.C. §101, as quoted by the Examiner, requiring definition of a functional description material capable of imparting useful functionality to a general-purpose computer. Moreover, Applicants' representative can find no instance of the word "database" in any of the claims objected to. Furthermore, in rejecting claim 11, the Examine states that "[s]oftware is a function descriptive material and function descriptive material is non-statutory subject matter." Applicants' representative believes that this statement is quite incorrect, and quite inconsistent with the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" issued by the USPTO and with the many thousands of software claims issued by the USPTO during the past 20 years. At any rate, Applicants' representative respectfully requests the Examiner to provided references to rules, statutes, or case law to justify the 35 U.S.C. §101 rejections, so that Applicants' representative has a basis for responding to the rejections.

All of the 35 U.S.C. §103(a) rejections of claims 1-20 appear to depend on Lim and Mittal for together disclosing the subject matter of the independent claims. Please consider claim 1, provided below for the Examiner's convenience:

> 1. (original) A method for classifying pixels of a microarray image with observed intensities within a region of interest, the method comprising:
> initially classifying pixels in the region of interest as either feature pixels or background pixels based on the intensities of the pixels; and
> iteratively computing, for pixels within the region of interest, probabilities that the pixels are feature pixels and probabilities that the pixels are background pixels, based on pixel locations and intensities, and accordingly classifying the pixels as either feature pixels or background pixels.

Microarrays are described in the background of the invention section of the current application, beginning on line 11 of page 1 continuing to the end of page 6. Additional information is provided beginning on line 11 of page 9 and extending to line 2 of page 13. The claim term "feature," as applied to microarrays, is described and defined in the current application beginning on line 12 of page 4 and continuing to line 23 of page 4, with reference to Figures 4-7. The phrase "region of interest" is discussed on lines 2-6 of

page 7, and a region of interest ("ROI") is illustrated in Figure 10 of the current application, with the region of interest 1002 including an area 1004 of relatively high intensities corresponding to feature pixels surrounded by an area 1006 of relatively lower intensities corresponding to background pixels. Claim 1 clearly claims a method for classifying pixels of a microarray image within a region of interest, where the classification comprises classifying pixels as either feature pixels, meaning that the pixels correspond to features of the microarray, or background pixels, meaning that the pixels correspond to non-feature portions of a microarray substrate.

Apparently, the Examiner has based the rejection of claim 1 on Lim and Mittal as a result of a text search, using certain of the terms and phrases included in claim 1. However, apparently the Examiner has failed to appreciate the significance of these terms, as clearly defined and described in the current application, as discussed above. Lim has nothing whatsoever to do with microarrays, microarray images, features of microarrays, regions of interests of microarrays, or anything else to which claim 1 is directed. The cited portion of Lim does include terms such as "feature," "background," and "pixel," but these terms are used with respect to a completely unrelated field and technology. As clearly stated by Lim in the abstract, Lim discloses a "digital image quality enhancement method and apparatus" that converts "RGB color data of a pixel of interest into color data having a brightness component and a saturation component," and segments "the pixel of interest into a background pixel, an image pixel, or a text pixel using the brightness component and saturation component." The current application is not concerned with digital image quality enhancement, conversion of RGB color data into alternative color data, and classification of pixels as being text or background of text. Furthermore, Lim discusses background features and image features, which have nothing whatsoever to do with microarray features or with classifying pixels as belonging to a microarray feature or a microarray-substrate background region. Lim does not discuss classifying pixels as belonging to a microarray feature or a microarray background, but instead discusses segmentation of an area of an image using a background-feature or image-feature classification. In short, Lim has nothing whatsoever to do with the subject matter to which claim 1 is directed and nothing to do with anything in the current
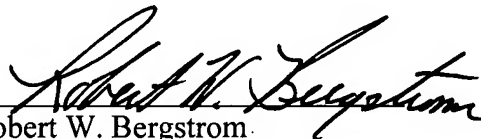
application.

Mittal is even less relevant, if that is possible, to the current application than Lim. As clearly stated by Mittal, Mittal discloses a "method for dynamic scene modeling and change detection applicable to motion analysis utilizing optical flow for capturing and modeling the dynamics of the scene." In other words, Mittal concerns motion analysis in video frames. Like Lim, Mittal does not once teach, mention, or suggest anything at all related to microarrays, microarray features, regions of interest, or anything else to which claim 1 is directed, or to anything discussed or described in the current application. Applicants' representative has failed to find a single reference to microarrays or microarray data, let alone features and background pixels in microarray images, in any reference cited by the Examiner.

It would seem that the Examiner has embarked on claim interpretation based on the general, English-language meanings of isolated terms without considering the context of the claims - namely the disclosure contained in the current application. These rejections fall far short of the requirements of a *prima facie* case of obviousness, as discussed in M.P.E.P. §2142. According to that section of the M.P.E.P., the prior art reference, or references when combined, must teach or suggest all the claim limitations. Claim limitations are not simply selected definitions of words isolated from their claim context and the context of the disclosure provided in the application containing the claim. Instead, the terms and phrases of a claim are interpreted according to their definitions and use within the application containing the claims and according to the meaning of the terms and words, within the context of the claim, as would be understood by one skilled in the art. No one, whether skilled or unskilled in the art of processing microarray data, can possibly interpret microarray features and regions of interest, as defined and discussed in the current application, as having anything whatsoever to do with detecting motion in video frames or enhancing digital images of text.

In Applicants' representative's opinion, all of the claims remaining in the current application are clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

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